

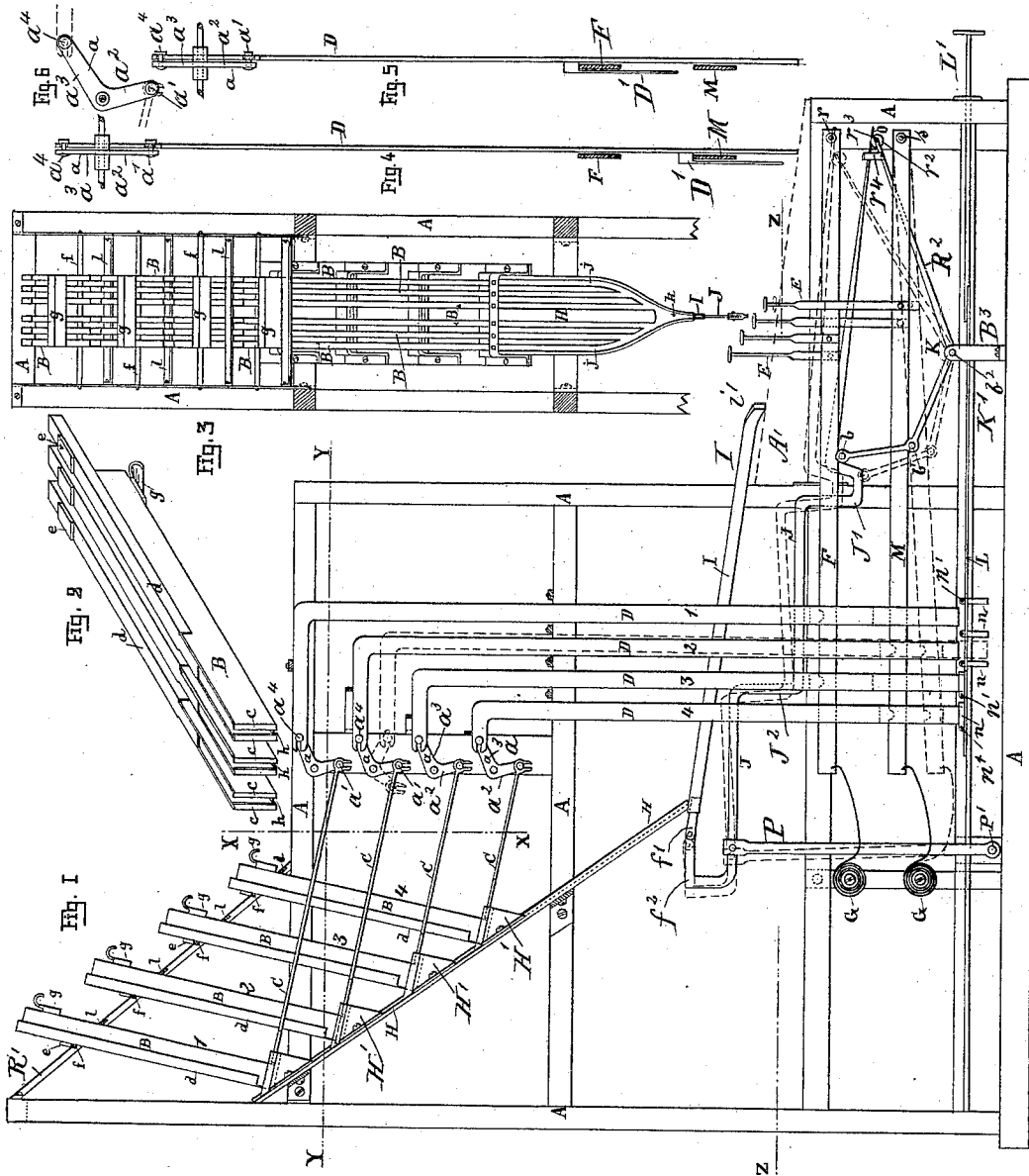
(No Model.)

3 Sheets—Sheet 1.

G. A. BOTTON.
TYPE SETTING MACHINE.

No. 473,691.

Patented Apr. 26, 1892.



Witnesses

Ella S. Johnson
P. W. Sommers

Inventor

George A. Cotton
for Henry Cotton
Att'y.

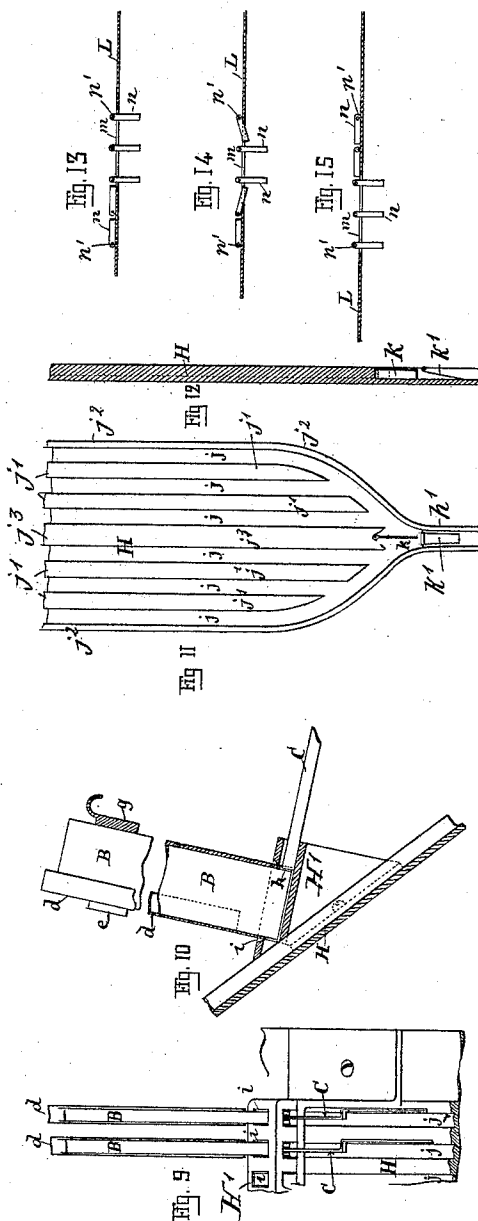
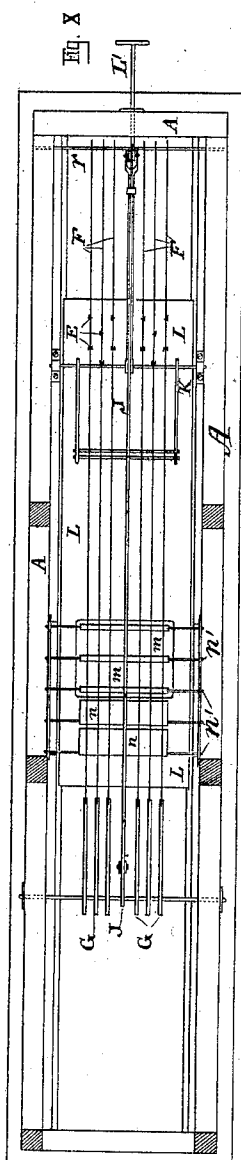
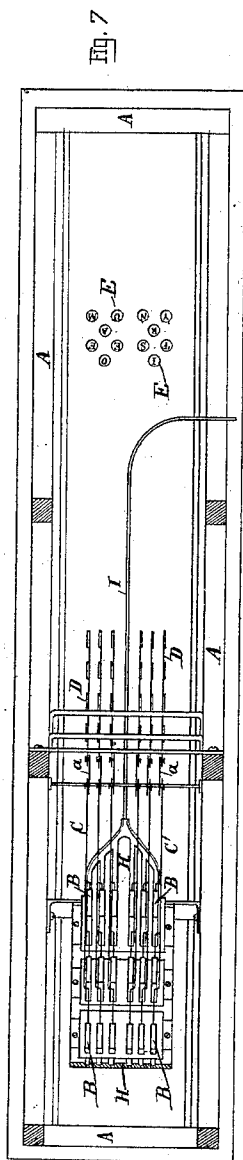
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3 Sheets—Sheet 3.

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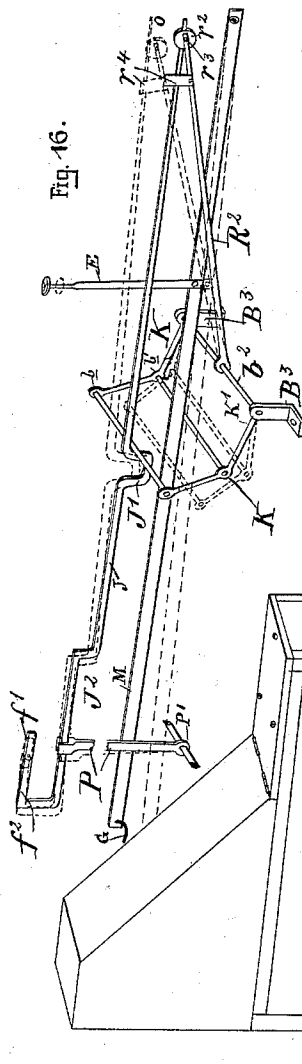


Fig. 16.

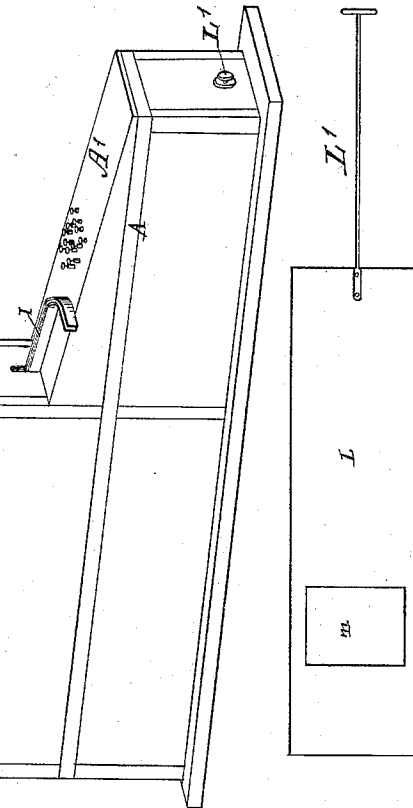


Fig. 17

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UNITED STATES PATENT OFFICE.

GEORGES ALPHONSE BOTTON, OF BEAUMONT-DU-PERIGORD, FRANCE.

TYPE-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 473,691, dated April 26, 1892.

Application filed October 28, 1890. Serial No. 369,545. (No model.) Patented in France December 23, 1889, No. 202,702, and in Belgium June 20, 1890.

To all whom it may concern:

Be it known that I, GEORGES ALPHONSE BOTTON, a citizen of the French Republic, and a resident of Beaumont-du-Perigord, in said French Republic, have invented certain new and useful Improvements in Type-Setting Machines, (for which I have obtained Letters Patent in France under date of December 23, 1889, No. 202,702, and in Belgium under date of June 20, 1890;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

The invention relates to composing or type-setting machines, and has for its object to provide a machine simple in its construction and compact, so as to occupy but a comparatively small space; and it consists in structural features and in combinations of mechanisms and parts, as will now be fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional side elevation; Fig. 2, a perspective view of some of the type-reservoirs; Fig. 3, a section on line *x x* of Fig. 1; Figs. 4 and 5, front views of the actuating-rods for the type pistons or ejectors; Fig. 6, a detail view of one of the bell-crank levers for connecting the actuating-bars with the type-ejector rods. Figs. 7 and 8 are sections on lines *Y Y* and *Z Z*, respectively, of Fig. 1. Figs. 9 to 17, inclusive, are detail views; and Fig. 18 is a perspective view of the inclosing casing of the machine.

Referring to Fig. 1, in which the operating devices are shown in connection with their supporting-framing, the inclosing boards or panels being omitted, as they are shown fully in Fig. 18, *A* indicates the frame-work; *A'*, the keyboard, (shown in dotted lines;) *EE'*, the keys arranged in banks or rows, each key bearing on its upper face a letter, number, or sign, or a plurality of such corresponding with the type in the reservoir or reservoirs pertaining to such keys. The order of the relative arrangement of the characters on the keys

will, as usual, be such as to facilitate the work of composing or setting up as much as possible, as is the practice in type-writers.

The type-reservoirs *B* consist of a sheet-metal trough or *U* shaped holder, the edges of the side walls of the trough being bent inwardly at the lower end to form flanges *c*, Fig. 2, that prevent the type from dropping out when a row of type-channels is lifted out of their seats. The front wall of the trough is cut away at its lower end to form an aperture *h*, Figs. 2 and 10, for the ejector that ejects the type from the reservoir. The trough-like reservoir is closed by a sliding cover *d*, except at the lower end, said cover being of such a length as to leave an opening for the passage of the lowermost type under the action of the ejector. A series of type-reservoirs *B* are preferably interconnected by a cross bar or plate secured to the front face of the reservoirs near their upper end, said connecting bar or plate having a hand-hold *g*, Figs. 1, 2, and 10, so that an entire row of reservoirs *B* can be lifted out of their bearings when this becomes necessary.

On each side of the frame-work is arranged an inclined rail *R'*, to which are secured two cross-rails *f* and *l* for each row of type-reservoirs, between which rails *f* and *l* the reservoirs are held, their covers being provided with a cleat or stop-plate *e* to hold them in proper position. The foot of the reservoirs extends into a housing *H'*, that is slotted in front and rear for the passage of the ejector and type, and has openings *i* at the top for the passage of the lower end of the reservoirs, as shown in Fig. 9, thus holding the same firmly in a forwardly-inclined position.

Beneath the reservoirs is arranged an inclined collecting-chute *H*, that has a channel *j* for each vertical row of reservoirs *B*, said channels being formed by ribs *j'*, as shown in Fig. 11, the chute having a raised encompassing flange or rim *j²*, that converges to or approximately to a point, so as to form a channel *h'*, by which the type is delivered into a delivery-channel *I*, extending through the front of the casing, the outer end of said channel being curved laterally, as shown at *i'*, Figs. 1 and 18, so as to deliver the type

in a horizontal row upon the keyboard A', or to a galley arranged by the side of the keyboard.

At the lower end of the central rib j^3 of the collecting chute or board H is pivoted a directing-gate k upon a vertical pintle, so as to swing to the left or right, according as the type comes from the channels j on the left or right of the central rib j^3 , the end of the gate bearing against the edge flange j^2 of the chute, so as to properly guide the type under a gate k' , adapted to swing on a horizontal pintle in the channel h' . (See Figs. 11 and 12.) The object of the gate k' is to check the velocity of the type to prevent their being thrown out of the delivery-channel by their momentum. As each type passes from under the gate k' into the delivery-channel I, it is fed forward along said channel by a feeding device, which consists of a follower f' , pivoted to the end of the arm f^2 of the U-shaped end of a feed-lever J, that is pivoted to the upper end of a bar P, itself pivoted to a rod P', as shown in Figs. 1 and 16. The feed-lever J has the cranked portion J' and is elbowed at J², so as to bring its arm f^2 in proper position relatively to the delivery-channel I.

On each side of the banks of keys E is arranged an angle or bell-crank lever connected together at both extremities and at the apex of the angle by three cross-rods $b b^2 b'$, respectively, the fulcrum-rod b^2 that connects the ends of the arms K' of said levers K being pivoted in brackets B³. Upon the fulcrum-rod b^2 is rigidly secured a rod R², whose outer free end is forked, each of the tines or arms of the fork being provided with a guide-disk r^2 , through which and the said arms passes a pin r^3 , that serves as guide and bearing for the outer end of the feed-lever J, which outer end is connected with the rod R² by a strip r^4 , through which the end of said lever projects to bear upon the pin r^3 , as shown in Figs. 1 and 16. The key-levers, hereinafter to be described, rest upon the cross-rods $b b'$, so that when one of said levers is depressed—say a lever resting upon cross-rod b' —the angle-levers K and cross-rods $b b'$ are also depressed, thereby elevating the rod R², and as the free end of this rod is connected with the forward end of the feed-lever J said forward end is also elevated, which movement would result in the depression of the rear end of the said lever were it not for the fact that the support P, to which the lever is fulcrumed, is itself pivotally connected with the frame, so that the elevation of the front end of said lever will tilt the support P on its pivot and move the follower f' rearwardly toward the end of the feed-channel I, clear of the exit of the chute H. As the key-lever again rises into its normal position the lever J will follow this movement, its rear end will descend by gravity, and the follower f' will be moved forward to push the type delivered to the channel I along the same. Of course it will be understood that the amplitude of

the reciprocations of the follower f' is at least equal to the space covered or taken up by a type in the delivery-channel I, so as to move the said type out of the way of the next type delivered to said channel. The disks r^2 on the rod R² serve also to weight said rod, so as to insure its return with the lever J into its normal position.

The keys E are arranged in banks, while the key-levers F M are arranged in two superposed rows and have their fulcra on two cross-rods r and s , Fig. 1, their rear ends being supported by or connected with the free ends of volute springs G, each key-stem being pivoted to a key-lever, and, as heretofore stated, the upper row of levers F rest upon the cross-rod b and the lower row M upon the cross-rod b' , that connect the angle-levers K, arranged one on each side of said rows of key-levers.

It is obvious that when a key-lever is depressed and released it will be lifted into its normal position by its volute spring G.

The type contained in the type-channels is expelled therefrom one after another through the medium of the following instrumentalities: C C are rods, to the rear ends of which is secured an ejector-plate adapted to pass into the housing H' and the type-reservoir B through the opening h at the foot thereof. The forward end of the rod C has a forked bearing formed at right angles thereto that straddles a pin a' , projecting from the lower shorter arm a^2 of a bell-crank lever a , whose upper longer arm a^3 has a like pin a^4 , which is straddled by the forked rear end of the horizontal arm of a vertical gravity angle-bar D. (See Figs. 1, 4, and 5.) Each of said bars is provided with a hook D', in the upper or closed end of which lies one of the key-levers F or M, and there may be as many such vertical angle-bars as desired for each of said levers.

In Fig. 1 I have shown four rows or banks of type reservoirs, their ejector-rods C, and vertical actuating-bars D, and, if desired, the actuating-bars of a row of four superposed reservoirs B may be controlled by one and the same key-lever, so that but a single key and key-lever is required for the setting up of four different type, thus requiring a great saving in mechanical parts, as well as in space horizontally, since the banks of reservoirs may be multiplied vertically to any desired extent, while there are but very few keys to be manipulated. Let it be supposed that the upper row of reservoirs (marked 1) contain the upper-case type, the next row 2 the lower-case type, the next row 3 the numerals, and the lowermost row 4 the signs, and the ejector-rods of four superposed reservoirs B, connected with the actuating-bars D 1 2 3 4, respectively. Let it be further supposed that each of said bars rests upon the lower key-lever M and it will be seen that if said lever is depressed, as shown in dotted lines, all of the four actuating-bars D, under their own weight—i. e., by gravity—will follow the movement, thereby pulling

down the arm a^3 of the bell-crank levers a , the arms a^2 thereof moving rearwardly, thereby causing the ejectors to eject the lowermost type from each of said reservoirs B, 1, 2, 3, and 4, so that an upper and a lower case type, a type bearing a numeral, and a type bearing a sign would be simultaneously ejected into the left-hand channel j of the collecting-chute H, Fig. 11. Of course in composing this relative delivery of type would not answer. To obviate this and permit one type after another to be ejected from the reservoirs, I employ what I will term a "register-plate" L, Fig. 17, in conjunction with shutters n , one for each actuating bar plus 1—that is to say, for the n detaching-bars there are $n + 1$ shutters. The shutters are hung on cross rods or pintles n' , secured to the frame-work at opposite ends. (See also Fig. 8.) Below said cross-rods is arranged the register-plate L, that is adapted to slide to and fro, it being provided with a handle L' , the end of which projects through the front wall of the keyboard A' . (See also Fig. 18.) The plate L has a single aperture or slot m , the width of which is equal to the space occupied by a transverse row of actuating-bars D and of such a length as to admit of the passage through said opening of at least two of the shutters n , which shutters are of a length equal to the width of the slot or aperture m in the said register-plate and the space between two shutters sufficiently large to admit of the free passage of an actuating-bar D. By sliding the plate backward or forward any two shutters may be allowed to drop into the slot m , the remaining shutters lying on the plate under the actuating-bars, thus preventing the same from dropping down, so that by properly positioning the register-plate any desired type may be ejected from the reservoir B, containing the same, whereby, as above stated, but a very limited number of keys and key-levers need be used.

In Fig. 1 I have shown the key-levers as arranged in two superposed rows F and M, each lever carrying two of the actuating-bars D of a row—namely, the lever F carries the bars D 3 1 and the lever M, the bars D 2 4. The register-plate L in said figure is shown in a position to allow all the bars D 2, resting on the row of the lower levers M, to drop when either of these levers is depressed, as shown in dotted lines, as well as all of the bars D 1, resting on the upper row of levers F, whenever such a lever is depressed. If now the register-plate is moved forward after a key F or M has been released, the pendent shutters n , coming in contact with the rear edge of the slot m , will be turned up, and when said slot has passed the shutters they will lie on the plate L, under their respective bars D, except the forward shutter, which will have moved out of the way of bar D 1, which now rests on the second shutter, the additional shutter being necessary in order that one such shutter will lie on each side of a descending bar D to guide the same properly, and also to insure

the proper locking of the bars against downward motion. Having provided means for locking the bars D against movement, any desired means may be provided for locking the registering-plate L against unauthorized manipulation. If instead of moving the register-plate forward it is moved backward, the first two shutters n will be turned up to lock the bars D, 1, and 2, while the last three shutters will drop, thus allowing the bars D, 3, and 4 to drop whenever a key-lever F or M is depressed.

In Figs. 4 and 5 I have shown the location of the engaging-hook D' on two bars D relatively to two superposed levers F M.

By the use of the register-plate and shutters, as described, the relative arrangement of the key-levers and actuating-bars or the number of such bars controlled by a key-lever may be varied almost *ad libitum* from a single row of levers, each coacting with any desired number of bars D to any desired number of superposed rows of such levers co-operating with one or more of said bars D, as will be readily understood.

It will be observed that the connections between the bars D and ejector-rods C with the bell-crank levers are loose connections, so that they may be readily disconnected, the same being the case as between the bars D and key-levers, the construction being of the simplest nature. Inasmuch as a transverse row of type-reservoirs B are interconnected they may be removed bodily when their contents are exhausted and again supplied with type.

It will be understood that the type are placed in the reservoir with their face toward the back of the apparatus, and on being ejected they will move up along their channel j of chute H until pushed clear of the housing H', when they will slide down shark foremost. It will also be observed that the angle at which the collecting board or chute H is arranged relatively to the delivery-channel I is such that the type on issuing from under the horizontal gate k' will stand on end in said channel face upward, or nearly so, being fully erected by the follower f' . The type as it issues from the curved delivery end v' of said channel I may be fed directly to a galley and the galley moved as each line is completed, or a composing-stick may be used and the typed placed therein as it issues from the channel I.

Having described my invention, what I claim is—

1. In a type-setting machine, the combination, with a plurality of type-reservoirs, an ejector for each of said reservoirs arranged to operate upon the lowermost type therein, and an actuating-bar for each of said ejectors, of a single key-lever on which said actuating-bars have bearing, and a locking device for locking any one of the actuating-bars against motion with the key-lever, substantially as set forth.

2. In a type-setting machine, the combination, with a series of type-reservoirs arranged in rows or banks, an ejector for each of said reservoirs adapted to operate upon the lowermost type therein, and an actuating-bar for each of said ejectors, of two superposed rows of key-levers, on each of which a plurality of actuating-bars have bearing, and a locking device adapted to lock the bars in series against movement with the key-levers, substantially as set forth.

3. In a type-setting machine, the combination, with a series of type-reservoirs arranged in rows or banks transversely and longitudinally of the machine, an ejector for each type-reservoir adapted to operate on the lowermost type therein, and an actuating-bar for each of said reservoirs, of rows or banks of key-levers arranged vertically and transversely of the machine, on each of which levers a plurality of actuating-bars have bearing, and a locking device adapted to lock the actuating-bars in transverse series against movement with the key-levers, substantially as set forth.

4. In a type-setting machine, the combination, with the type-reservoirs provided with a stop-plate on their rear faces and a connecting plate or bar rigidly connecting a plurality of said reservoirs, of the inclined rails R' , the transverse rails fl and the housings H' , constructed as described, substantially as and for the purpose set forth.

5. In a type-setting machine, a type-reservoir consisting of a sheet-metal case U -shaped in cross-section and having the edges at one end of its sides bent inwardly and its front cut away at that end to form an opening h , a sheet-metal cover, also U -shaped in cross-section and slightly shorter than the case, said cover being provided with a cleat e , and said case with a hand-hold g , substantially as and for the purpose set forth.

6. In a type-setting machine, the combination, with the type-reservoir and an ejector adapted to operate on the lowermost type in said reservoir, of means for imparting motion to the ejector, consisting of an angle-gravitational bar, a connection between the bar and ejector to convert the vertical motion of the bar into horizontal motion, and a key from which said bar is supported in a normal or non-operative position, as set forth.

7. In a type-setting machine, the combination, with a type-reservoir and an ejector adapted to operate upon the lowermost type in said reservoir and having a forked bearing at its forward end, of means for imparting motion to the ejector, consisting of an angle-gravity-bar, the horizontal arm of which has also a forked bearing, a bell-crank lever provided with pins a' a'' , fitting the forked bearings of the ejector and bar, respectively, and a key-lever, on a horizontal fulcrum on which lever said bar is seated, substantially as and for the purpose set forth.

8. In a type-setting machine, the combina-

tion, with the delivery-channel I and the collecting-chute arranged at an angle to said channel, of means for feeding the type delivered by the chute to the channel along the same, consisting of a horizontal lever the outer end of which is U -shaped, a follower pivoted to the upper arm of said U -shaped portion and working in the delivery-channel, a vibrating support for said lever, a pivotal connection between said support and lever, and a key-lever adapted to impart to the feed-lever a substantially horizontal reciprocating movement, as and for the purpose set forth.

9. In a type-setting machine, the combination, with the feed-lever J , constructed as described, the follower f , pivoted to the rear end thereof, and the pivoted support P for said lever, of a key-lever and means for imparting a rising and falling movement to the feed-lever, consisting of a lever upon the free end of which said key-lever has bearing, and a connecting-rod rigidly secured to the lever-fulcrum and connected with the forward end of the feed-lever, substantially as and for the purposes set forth.

10. In a type-setting machine, the combination, with key-levers arranged in superposed series, the delivery-channel I , a type-collecting chute discharging into said channel, and a feeding device for feeding the type along the channel, consisting of the feed-lever J , constructed as described, the follower f' , pivoted to the lever at its rear end and the pivotal support P for said rear end of the lever, of means for rocking the lever and its pivotal support, consisting of two bell-crank levers arranged on opposite sides of the key-levers and having a common fulcrum b^2 , the cross connecting-rods b and b' upon which the upper and lower series of key-levers have bearing, the rod R^2 , rigidly connected with the fulcrum b^2 of the angle-levers, and a connection between said rod and the outer end of the feed-lever, substantially as and for the purpose set forth.

11. In a type-setting machine, the combination, with key-levers arranged in superposed rows or banks, type-reservoirs arranged in rows or banks, ejectors adapted to operate upon the lowermost type in said reservoirs, an actuating gravity-bar for each of said ejectors, said gravity-bars having bearing on the key-levers, of the sliding register-plate L , provided with a slot m , and the shutters n , hung on fixed rods n' , said plate and shutters being constructed and operating relatively to the gravity-bars, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of June, 1890.

GEORGES ALPHONSE BOTTON.

Witnesses:

FREDERIC MATRAY,
VICTOR MATRAY.